IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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Attorney Docket No. 15258US03

In the Application of:

Ahmadreza Rofougaran et al.

U.S. Serial No.: 09/695,715

Filed: October 23, 2000

For: AN ADAPTIVE RADIO TRANSCEIVER

Examiner: Marceau Milord

Group Art Unit: 2682

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APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This paper is an Appeal Brief in support of a Notice of Appeal that was received at the United States Patent and Trademark Office on May 18, 2005. Appellants have enclosed a Request for a One-Month Extension of Time.

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REAL PARTY IN INTEREST

Broadcom Corporation, a corporation organized under the laws of the state of California and having a place of business at 16215 Alton Parkway, Irvine, California 92618-3616, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment filed with the present application and recorded on Reel 011831, Frame 0398.

RELATED APPEALS AND INTERFERENCES

There are currently no appeals pending regarding related applications.

STATUS OF THE CLAIMS

Claims 164-221 are pending in the present application. Pending claims 164-221 have been rejected under 35 U.S.C. § 103(a) and are the subject of this appeal.

STATUS OF THE AMENDMENTS

There are no amendments pending in the present application.

SUMMARY OF THE INVENTION

Some embodiments according to some aspects of the present invention may provide a complimentary metal oxide semiconductor (CMOS) integrated circuit that includes, for example, a transmitter. The transmitter may include, for example, a tunable oscillator, a mixer, a phase detector and a local oscillator. The tunable oscillator may have, for example, a tuning input. The mixer may have, for example, a first input coupled to the oscillator, a second input and an output. The phase detector may have, for example, a first input coupled to the mixer output, a second input and an output coupled to the tuning input. The local oscillator may be coupled to, for example, the second input of the mixer.

Some embodiments according to some aspects of the present invention may provide a transmission system that includes, for example, a transmitter and a local

oscillator. The transmitter may include, for example, a tunable oscillator, a subsampling mixer and a phase detector. The tunable oscillator may have, for example, a tuning input. The subsampling mixer may have, for example, a first input coupled the oscillator, a second input and an output. The phase detector may have, for example, a first input coupled to the mixer output, a second input, and an output coupled to the tuning input. The local oscillator may be coupled to, for example, the second input of the mixer.

Some embodiments according to some aspects of the present invention may provide a complimentary metal oxide semiconductor (CMOS) transmitter system that may include, for example, first oscillator means, mixer means, detector means and second oscillator means. The first oscillator means may generate, for example, a first signal having a tunable frequency and may include, for example, tuning means that may tune the frequency of the first signal. The mixer means may mix the first signal with a second signal to produce a mixed signal. The detector means may detect a phase difference between the mixed signal and an input signal may generate an error signal which is a function of the phase difference. The tuning means may be responsive to the error signal. The second oscillator means may generate the second signal.

Some embodiments according to some aspects of the present invention may provide a transmitter system that may include, for example, first oscillator means, mixer means, filter means, detector means and second oscillator means. The first oscillator means may generate a first signal having a tunable frequency and may include, for example, tuning means that may tune the frequency of the first signal. The mixer means may mix the first signal with a second signal to produce a mixed signal. The filter means may filter the mixed signal to generate a difference signal between the frequency of the first signal and a harmonic of the second signal. The detector means may detect a phase difference between the filtered mixed signal and an input signal and may generate an error signal which is a function of the phase difference. The tuning means may be responsive to the error signal. The second oscillator means may generate the second signal.

ISSUES FOR REVIEW

Whether claims 164-221 are unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,167,246 to Joseph S. Elder et al. ("Elder") in view of U.S. Patent No. 4,710,970 to Joseph C. Wu et al. ("Wu").

GROUPING OF CLAIMS

Claims 164-221 stand or fall together.

ARGUMENT

With respect to claims 164-221, Appellants respectfully submit that Elder in view of Wu were improperly combined.

Appellants cannot stress enough that Elder relates to a fully integrated all-CMOS receiver and that independent claims 164, 182, 199 and 211 recite a transmitter, a transmitter system and/or a transmission system. The title of Elder is "Fully Integrated All-CMOS AM Receiver". See title of Elder. The Field of the Invention section states that "[t]his invention relates to radio wave receivers and, in particular, to a receiver formed as a single integrated circuit." See col. 1, lines 13-14 of Elder. The Background section describes "radio receivers, such as amplitude modulation (AM) type receivers". See col. 1, lines 17-18 of Elder. All the figures in Elder relate to the AM receiver. "FIG. 1 is a block diagram of a single chip receiver in accordance with one embodiment of the invention. FIG. 2 provides an additional detail of the LO Sweep Generator" which is merely a detailed figure of a component in FIG. 1 which illustrates a single chip receiver. See col. 2, lines 3-5 of Elder. "FIG.3 illustrates an optimum LO sweep range" which merely adds further detail to FIG. 2 which all relates to the AM receiver. See col. 2, line 7 of Elder. "FIGS. 4-76 illustrate actual circuitry for implementing a preferred embodiment of the single chip receiver." See col. 2, lines 8-10 of Elder.

The above-identified evidence supports Appellants' view that the disclosure relates to a fully integrated all-CMOS AM receiver and not a transmitter as alleged by the Examiner. The Examiner has pointed to isolated incidents in which the term "transmitter" has been used and erroneously assumed that particular figures, particular

components in particular figures or descriptions thus relate to a "transmitter" because of the mere proximity of the various descriptions to the term "transmitter". However, the Examiner has taken excerpts from Elder and taken the excerpts out of context in make such broad sweeping interpretations and characterizations.

The point of the invention of Elder is that the alleged complexities (e.g., additional functions) and inventive concepts provided in the fully integrated all-CMOS AM receiver allow for the allegedly inventive and more complex fully integrated all-CMOS AM receiver to be used with simpler, cheaper and less accurate transmitters. However, Elder does not describe a transmitter in any figure and merely mentions a transmitter in passing as a foil to the superior qualities of the fully integrated all-CMOS AM receiver. In other words, Elder describes a fully integrated all-CMOS AM receiver that can be used with a simpler, less accurate and cheaper transmitter. However, such a transmitter is not described in detail and merely mentioned in passing since Elder relates to a receiver and not a transmitter. Appellants believe that support for Appellants' interpretation can be found in the very text that is cited by the Examiner, for example, in the Summary section of Elder:

> The receiver uses a novel architecture that allows the receiver to demodulate signals over a wide RF band, which eliminates the need for manual tuning. This is referred to as a swept LO mode. This also significantly relaxes the frequency accuracy and stability requirements of the Transmitter, allowing the receiver to be compatible with both SAW-based and LC-based transmitters. The receiver sensitivity and selectivity are sufficient to provide low bit error rates for decode ranges over 100 meters, equaling the performance of other more expensive solutions.

See col. 1, lines 37-47 of Elder. Thus, the alleged innovations of Elder allow it to be used even with the cheaper and less accurate SAW-based and LC-based transmitters. In view of this interpretation, it is clear that the Examiner is incorrect in his interpretation that the figures illustrate components of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211. Clearly, Elder mentions, only in passing, "SAW-based and LC-based" transmitters, the description of such transmitters being so limited.

In support of the Examiner's argument that Elder teaches the recited elements of a transmitter, a transmission system and/or a transmitter system as set forth in independent claims 164, 182, 199 and 211, the Examiner cites col. 1, lines 39-44, col. 2, lines 52-61 and col. 3, lines 31-35 of Elder. Col. 1, lines 39-44 of Elder was already discussed above. Appellants reproduce the relevant lines of the other citations below:

> In the context of this application, fully integrated means that all of these functions in their entirety have been simultaneously incorporated onto a single semiconductor die (integrated circuit or IC). Additional aspects of the receiver (to be detailed subsequently) reduce overall radio system complexity, cost, and transmitter performance requirements. Note that DC control lines for the receiver (described subsequently) may be either pinned-out for maximum end-user control, or may be fixed on the die via a metal mask, the latter allowing the most economical packaging.

Col. 2, lines 52-61 of Elder.

> In Swept mode, the LO frequency is varied across a range of frequencies at a rate sufficiently higher than the data rate to allow for peak (envelope) detection. This mitigates the requirement for an accurately controlled and/or age and temperature stabilized transmitter carrier frequency.

Col. 3, lines 31-35 of Elder.

Appellants respectfully submit that col. 2, lines 52-61 of Elder merely support Appellants' interpretation that allegedly inventive aspects provided in the fully integrated all-CMOS AM receiver "reduce[s] ... transmitter performance requirements". In other words, because of the additional circuitry shown in FIGS. 1-76, the fully integrated all-CMOS AM receiver can be used with simpler, cheaper, less accurate transmitters that have reduced transmitter performance requirements. Elder does not, however, describe the details of these transmitters since that is not the impetus of the invention or the descriptions in Elder.

Appellants respectfully submit that col. 3, lines 31-35 of Elder also merely support Appellants' interpretation that allegedly inventive aspects provided in the fully integrated all-CMOS AM receiver such as the swept LO mode merely reduces the requirements of any transmitter in communication with the fully integrated all-CMOS

AM receiver. In other words, because of the additional circuitry shown in FIGS. 1-76, the fully integrated all-CMOS AM receiver can be used with simpler, cheaper, less accurate transmitters that do not have "accurately controlled and/or age and temperature stabilized transmitter carrier frequency". Elder does not, however, describe the details of these transmitters since that is not the impetus of the invention or the descriptions in Elder.

Appellants respectfully submit that the Examiner was incorrect in alleging that Elder taught or suggested the recited elements of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211. Appellants respectfully submit that, despite the Examiner's allegations to the contrary, Elder relates to a receiver and not, as alleged by the Examiner despite all the evidence provided by Appellants during the prosecution of the present application, to a transmitter. It was improper for the Examiner to recite receiver components of the fully integrated all-CMOS AM receiver to meet the elements of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211.

Elder teaches a fully integrated all-CMOS AM receiver and not a transmitter as alleged by the Examiner. The components in FIGS. 1-2 of Elder are components of a fully integrated all-CMOS AM receiver as opposed to components of a transmitter, transmitter system and/or transmission system as set forth in independent claims 164, 182, 199 and 211.

M.P.E.P. § 2145(X)(D)(1) states that "[a] prior art reference that 'teaches away' from the claimed invention is a significant factor to be considered in determining obviousness" (citing *In re Gurley*, 27 F. 3d 551, 554, 31 U.S.P.Q.2d 1130, 1132 (Fed. Cir. 1994).

The components that the Examiner has selectively picked from the various figures of Elder are all components of a receiver, not components of a transmitter, a transmitter system and/or a transmission system as recited in independent claims 164, 182, 199 and 211. Appellants respectfully submit that the receiver of Elder teaches away from the transmitter, the transmitter system and/or the transmission system as set forth in the claim inventions recited in independent claims 164, 182, 199 and 211. Since this is a "significant factor" to be considered in determining obviousness, Appellants respectfully

submit that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu.

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

M.P.E.P. § 2145(X)(D)(2) states "[i]t is improper to combine references where the references teach away from their combination" (citing In re Grasselli, 713 F. 2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983)).

The Examiner has attempted to combine the teachings of Elder with the teachings of Wu. The combination was based on the Examiner's interpretation that Elder taught a transmitter, not a receiver. However, in view of the arguments made of record during the prosecution of the present application and the arguments made above, it is clear that Elder teaches a receiver and not a transmitter. Thus, since the receiver receiving AM signals in Elder teaches away from the transmitter transmitting FM signals in Wu and vice versa, Appellants respectfully submit that Elder and Wu were improperly combined.

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

Under the heading "The Proposed Modification Cannot Render the Prior Art Unsatisfactory for Its Intended Purpose", M.P.E.P. § 2143.01 states that "[i]f the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification" (citing *In re Gordon*, 733 F. 2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)).

There can be no argument that the intended purpose of Elder is to provide a fully integrated all-CMOS AM receiver. There can be no argument that the components cited by the Examiner in FIGS. 1 and 2 of Elder are components of a fully integrated all-CMOS AM receiver. Regardless of what Wu allegedly teaches, Wu cannot modify Elder to make it a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211 because Elder would not longer be a receiver (e.g., a fully integrated all-CMOS AM receiver), which is its intended purpose. Appellants respectfully submit that Elder cannot be modified to provide a transmitter, a

transmitter system and/or a transmission system since such a modification would be a radical departure from its intended purpose as a receiver such as a fully integrated all-CMOS receiver. In other words, the Examiner is attempting to make the receiver of Elder, whose intended purpose is to receive, into a transmitter, whose intended purpose is allegedly to transmit. Modifying Elder as suggested by the Examiner (i.e., modifying Elder's receiver into a transmitter) would render Elder unsatisfactory for its intended purpose (i.e., originally as a receiver).

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

Under the heading "The Proposed Modification Cannot Change the Principle of Operation of a Reference", M.P.E.P. § 2143.01 states that "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the reference are not sufficient to render the claims *prima facie* obvious."

Regardless of what Wu allegedly teaches, Wu cannot modify Elder to make Elder into a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164-181 because the principle operation of a transmitter, a transmitter system and/or a transmission system that transmits would present a radical change or an extreme departure from the principle operation of Elder as a receiver that receives such as a fully integrated all-CMOS receiver.

In addition, Appellants respectfully note that another aspect of the principle of operation of Elder is that of an AM receiver. Elder uses the principle of amplitude modulation (AM) in its operation as a receiver. On the other hand, Wu teaches a different principle of operation (which also further supports previous arguments that Elder and Wu teach away from each other). Wu uses the principle of frequency modulation (FM) in its operation as a transmitter. To modify Elder to use frequency modulation (FM) instead of amplitude modulation (AM) and to modify Elder to operate as a transmitter, a transmitter system and/or a transmission system instead of a receiver represent an overwhelming change in the principle of operation of Elder. Accordingly,

the proposed modification of Elder in view of Wu is prohibited and the obviousness rejection cannot be maintained.

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

Appellants respectfully submit that any one of the above arguments carries substantial weight in reversing the obviousness rejection over Elder in view of Wu. However, the combined arguments carry even more weight in reversing the obviousness rejection over Elder in view of Wu.

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

To maintain an obviousness rejection, each and every element as set forth in independent claims 164, 182, 199 and 211 must be taught or suggested by Elder in view of Wu. Appellants respectfully submit that each and every element as set forth in claim 164 is not taught or suggested by Elder in view of Wu.

In each case, with respect to the independent claims, the Examiner did not recite components of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211. Instead, the Examiner cited components in Elder which were components of a receiver (i.e., a fully integrated all-CMOS AM receiver). Such teaching deficiencies were not overcome by the teachings of Wu. Thus, the Examiner failed to even present a *prima facie* case of obviousness.

In the Final Office Action and the Advisory Action, the Examiner relies on citations in Elder such as:

> The receiver uses a novel architecture that allows the receiver to demodulate signals over a wide RF band, which eliminates the need for manual tuning. This is referred to as a swept LO mode. This also significantly relaxes the frequency accuracy and stability requirements of the Transmitter, allowing the receiver to be compatible with both SAW-based and LC-based transmitters.

Elder at col. 1, lines 37-43. Appellants respectfully draw the attention of the Board to the fact that, although the cited text does mention "SAW-based and LC-based transmitters",

the cited text is describing "the receiver [that] uses a novel architecture that allows the receiver to demodulate signals over a wide RF band". Elder at col. 1, lines 37-38. The cited text does not further elaborate on the components of the transmitters. Thus, Elder at col. 1, lines 37-43 only mentions SAW-based and LC-based transmitters. Despite such limited description, the Examiner has cited components in the figures which are components of a fully integrated all-CMOS AM receiver, not a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211.

In the Final Office Action and the Advisory Action, the Examiner relies on citations in Elder such as:

> The Local Oscillator 9 (LO) can be operated in either fixed mode or swept mode, selectable via a DC control line SWEN. Fixed mode operation is preferred for precision or high-performance applications.
>
> In Swept mode, the LO frequency is varied across a range of frequencies at a rate sufficiently higher than the data rate to allow for peak (envelope) detection. This mitigates the requirement for an accurately controlled and/or age and temperature stabilized transmitter carrier frequency.

Elder at col. 3, lines 27-35. Appellants respectfully draw the attention of the Board to the fact that, although the cited text does mention that allegedly novel aspects of the receiver "[mitigate] the requirement for an accurately controlled and/or age and temperature stabilized transmitter carrier frequency", the cited text relates to the receiver and, in particular, the receiver component 9 which is a local oscillator found on FIG. 1 of Elder, FIG. 1 being entitled "Fully Integrated CMOS AM Receiver". Elder at col. 3, lines 33-35. The cited text does not describe the transmitter at all, instead, the cited text describes a transmitter carrier frequency. The cited text is silent as to the components or configuration of a transmitter, a transmission system and/or a transmitter system as set forth in independent claims 164, 182, 199 and 211. Despite such limited description, the Examiner has cited components in the figures of Elder which are components of a fully integrated all-CMOS AM receiver, not a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211.

Appellants respectfully submit that the Examiner has not even presented a *prima facie* case of obviousness. See, e.g., Graham v. John Deere, 383 U.S. 1, 148 U.S.P.Q. 459 (1966). M.P.E.P. § 2142 states that "[t]he examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness" (citations from the M.P.E.P. omitted). The components recited by the Examiner are parts of a receiver described in Elder and are not parts of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211. In addition, since the teaching deficiencies of Elder are not entirely made up by the teachings of Wu, the obviousness rejection with respect to independent claims 164, 182, 199 and 211 cannot be maintained.

For at least the above reasons, it is therefore respectfully requested that the obviousness rejection be reversed by the Board with respect to claim 164-221

CONCLUSION

For at least the foregoing reasons, claims 164-221 are distinguishable over the prior art of record. Reversal of the Examiner's rejection and issuance of a patent on the application are therefore requested.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Account No. 13-0017.

Dated: August 18, 2005

Respectfully submitted,

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APPENDIX

The following claims are involved in this appeal:

164. A complimentary metal oxide semiconductor (CMOS) integrated circuit, comprising:

a transmitter including,

a tunable oscillator having a tuning input,

a mixer having a first input coupled the oscillator, a second input, and an output, and

a phase detector having a first input coupled to the mixer output, a second input, and an output coupled to the tuning input; and

a local oscillator coupled to the second input of the mixer.

165. The CMOS integrated circuit of claim 164 wherein the oscillator comprises a voltage controlled oscillator.

166. The CMOS integrated circuit of claim 164 wherein the transmitter further comprises a bandpass filter coupled between the mixer output and the first input of the phase detector.

167. The CMOS integrated circuit of claim 166 wherein the transmitter further comprises a limiter coupled between the bandpass filter and the first input of the phase detector.

168. The CMOS integrated circuit of claim 164 wherein the transmitter further comprises a charge pump coupled between the phase detector output and the tuning input of the oscillator.

169. The CMOS integrated circuit of claim 164 wherein the transmitter further comprises a loop filter coupled between the phase detector output and the oscillator tuning input.

170. The CMOS integrated circuit of claim 164 wherein the oscillator comprises a voltage controlled oscillator, the CMOS integrated circuit further comprising a bandpass filter coupled to the mixer, a limiter coupled between the bandpass filter and the first input of the phase detector, a charge pump coupled to the phase detector output, and a loop filter coupled between the charge pump and the tuning input of the oscillator.

171. The CMOS integrated circuit of claim 164 wherein the mixer comprises a subsampling mixer.

172. The CMOS integrated circuit of claim 171 wherein the mixer comprises a track and hold circuit coupled to the inputs of the mixer and the output of the mixer, and a bandpass circuit coupled to the first input of the mixer and the output of the mixer.

173. The CMOS integrated circuit of claim 172 wherein the mixer further comprises an input circuit disposed between the first input of the mixer and the track and hold circuit.

174. The CMOS integrated circuit of claim 172 wherein the mixer further comprises a buffer disposed between the track and hold circuit and the output of the mixer.

175. The CMOS integrated circuit of claim 172 wherein the bandpass circuit comprises an inductor coupled to the first input of the mixer and a capacitor coupled to the output of the mixer.

176. The CMOS integrated circuit of claim 172 wherein the track and hold circuit comprises a switch between the first input of the mixer and the output of the mixer, the switch being adapted for control by a signal applied to the second input of the mixer from the local oscillator.

177. The CMOS integrated circuit of claim 176 wherein the switch comprises a transistor having a gate coupled to the second input of the mixer, a source coupled to the first input of the mixer, and a drain, and wherein the bandpass circuit comprises a capacitor coupled to the drain, and an inductor coupled to the source.

178. The CMOS integrated circuit of claim 177 wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the first input of the mixer from the tunable oscillator.

179. The CMOS integrated circuit of claim 172 wherein the track and hold circuit comprises a transistor having an input node coupled to the first input of the mixer and an output node coupled to the output of the mixer, and a current source coupled to the output of the mixer, the current source being adapted for control by a signal applied to the second input of the mixer.

180. The CMOS integrated circuit of claim 179 wherein the current source comprises a second transistor having a gate coupled to the first input of the mixer, a drain coupled to the output of the mixer, and a source, and wherein the bandpass circuit comprises a capacitor coupled to the output of the mixer and an inductor coupled to the drain of the second transistor.

181. The CMOS integrated circuit of claim 180 wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the first input of the mixer from the tunable oscillator.

182. A transmission system, comprising:

a transmitter including,

a tunable oscillator having a tuning input,

a subsampling mixer having a first input coupled the oscillator, a second input, and an output, and

a phase detector having a first input coupled to the mixer output, a second input, and an output coupled to the tuning input; and

a local oscillator coupled to the second input of the mixer.

183. The transmission system of claim 182 wherein the oscillator comprises a voltage controlled oscillator.

184. The transmission system of claim 182 wherein the transmitter further comprises a bandpass filter coupled between the subsampling mixer output and the first input of the phase detector.

185. The transmission system of claim 184 wherein the transmitter further comprises a limiter coupled between the bandpass filter and the first input of the phase detector.

186. The transmission system of claim 182 wherein the transmitter further comprises a charge pump coupled between the phase detector output and the tuning input of the oscillator.

187. The transmission system of claim 182 wherein the transmitter further comprises a loop filter coupled between the phase detector output and the oscillator tuning input.

188. The transmission system of claim 182 wherein the oscillator comprises a voltage controlled oscillator, the transmission system further comprising a bandpass filter coupled to the mixer output, a limiter coupled between the bandpass filter and the first

input of the phase detector, a charge pump coupled to the phase detector output, and a loop filter coupled between the charge pump and the tuning input of the oscillator.

189. The transmission system of claim 171 wherein the mixer comprises a track and hold circuit coupled to the inputs of the mixer and the output of the mixer, and a bandpass circuit coupled to the first input of the mixer and the output of the mixer.

190. The transmission system of claim 189 wherein the mixer further comprises an input circuit disposed between the first input of the mixer and the track and hold circuit.

191. The transmission system of claim 189 wherein the mixer further comprises a buffer disposed between the track and hold circuit and the output of the mixer.

192. The transmission system of claim 189 wherein the bandpass circuit comprises an inductor coupled to the first input of the mixer and a capacitor coupled to the output of the mixer.

193. The transmission system of claim 189 wherein the track and hold circuit comprises a switch between the first input of the mixer and the output of the mixer, the switch being adapted for control by a signal applied to the second input of the mixer from the local oscillator.

194. The transmission system of claim 193 wherein the switch comprises a transistor having a gate coupled to the second input of the mixer, a source coupled to the first input of the mixer, and a drain, and wherein the bandpass circuit comprises a capacitor coupled to the drain, and an inductor coupled to the source.

195. The transmission system of claim 194 wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the first input of the mixer from the tunable oscillator.

196. The transmission system of claim 189 wherein the track and hold circuit comprises a transistor having an input node coupled to the first input of the mixer and an output node coupled to the output of the mixer, and a current source coupled to the output of the mixer, the current source being adapted for control by a signal applied to the second input of the mixer.

197. The transmission system of claim 196 wherein the current source comprises a second transistor having a gate coupled to the first input of the mixer, a drain coupled to the output of the mixer, and a source, and wherein the bandpass circuit comprises a capacitor coupled to the output of the mixer and an inductor coupled to the drain of the second transistor

198. The transmission system of claim 197 wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the first input of the mixer from the tunable oscillator.

199. A complimentary metal oxide semiconductor (CMOS) transmitter system, comprising:

first oscillator means for generating a first signal having a tunable frequency, the first oscillating means comprising tuning means for tuning the frequency of the first signal;

mixer means for mixing the first signal with a second signal to produce a mixed signal;

detector means for detecting a phase difference between the mixed signal and an input signal, and generating an error signal which is a function of the phase difference, the tuning means being responsive to the error signal; and

second oscillator means for generating the second signal.

200. The CMOS transmitter system of claim 199 wherein the first oscillator means comprises a voltage controlled oscillator, the tuning means being responsive to a voltage of the error signal.

201. The CMOS transmitter system of claim 199 further comprising filter means for filtering the mixed signal before being applied to the detector means, the filtered mixed signal comprising a difference frequency between the tuned frequency of the first signal and a frequency of the second signal.

202. The CMOS transmitter system of claim 201 further comprising means for limiting the filtered mixed signal from the filter means before being applied to the detector means.

203. The CMOS transmitter system of claim 199 further comprising means for sourcing current to the tuning means responsive to the error signal.

204. The CMOS transmitter system of claim 199 further comprising means for filtering the error signal from the detecting means before being applied to the tuning means.

205. The CMOS transmitter system of claim 199 wherein the first oscillator means comprises a voltage controlled oscillator, the tuning means being responsive to a voltage of the error signal, the CMOS transmitter system further comprising filter means for filtering the mixed signal before being applied to the detector means, the filtered mixed signal comprising a difference frequency between the tuned frequency of the first signal and a frequency of the second signal, means for limiting the filtered mixed signal from the filter means before being applied to the detector means, current means for sourcing current to the tuning means responsive to the error signal, and means for filtering the current sourced error signal from the current means before being applied to the tuning means.

206. The CMOS integrated circuit of claim 199 wherein the mixer means comprises a subsampling mixer.

207. The CMOS integrated circuit of claim 206 wherein the subsampling mixer comprises track and hold means for tracking and holding the first signal in response to the second signal, and limiting means for limiting the response of the track and hold means to a frequency band, the first signal being within the frequency band.

208. The CMOS integrated circuit of claim 207 further comprising means for buffering first signal before being applied to the track and hold means.

209. The CMOS integrated circuit of claim 207 wherein the limiting means comprises an inductor and capacitor each being coupled to the track and hold means.

210. The CMOS integrated circuit of claim 207 wherein the track and hold means comprises a switch in a path of the first signal, the switch being controlled by the second signal.

211. A transmitter system, comprising:

first oscillator means for generating a first signal having a tunable frequency, the first oscillating means comprising tuning means for tuning the frequency of the first signal;

mixer means for mixing the first signal with a second signal to produce a mixed signal;

filter means for filtering the mixed signal to generate a difference signal between the frequency of the first signal and a harmonic of the second signal; and

detector means for detecting a phase difference between the filtered mixed signal and an input signal, and generating an error signal which is a function of the phase difference, the tuning means being responsive to the error signal: and

second oscillator means for generating the second signal.

212. The transmitter system of claim 211 wherein the first oscillator means comprises a voltage controlled oscillator, the tuning means being responsive to a voltage of the error signal.

213. The transmitter system of claim 211 wherein the second signal comprises a frequency different from the frequency of the first oscillator means

214. The transmitter system of claim 211 further comprising means for limiting the filtered mixed signal from the filter means before being applied to the detector means.

215. The transmitter system of claim 211 further comprising means for sourcing current to the tuning means responsive to the error signal.

216. The transmitter system of claim 211 further comprising means for filtering the error signal from the detecting means before being applied to the tuning means.

217. The transmitter system of claim 211 wherein the first oscillator means comprises a voltage controlled oscillator, the tuning means being responsive to a voltage of the error signal, and the second signal comprises a frequency different from the frequency of the first oscillator means, the transmitter system further comprising means for limiting the filtered mixed signal from the filter means before being applied to the detector means, current means for sourcing current to the tuning means responsive to the error signal, and means for filtering the current sourced error signal from the current means before being applied to the tuning means.

218. The transmitter system of claim 211 wherein the mixer comprises track and hold means for tracking and holding the first signal in response to the second

signal, and limiting means for limiting the response of the track and hold means to a frequency band, the first signal being within the frequency band.

219. The transmitter system of claim 218 further comprising means for buffering first signal before being applied to the track and hold means

220. The transmitter system of claim 218 wherein the limiting means comprises an inductor and capacitor each being coupled to the track and hold means.

221. The transmitter system of claim 218 wherein the track and hold means comprises a switch in a path of the first signal, the switch being controlled by the second signal.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/695,715
Filing Date	October 23, 2000
First Named Inventor	A. Rofougaran
Art Unit	2682
Examiner Name	M. Milord
Attorney Docket Number	15258US03
Total Number of Pages in This Submission	73

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ENCLOSURES (check all that apply)

- ☒ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☒ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
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  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☒ Appeal Communication to TC (*Appeal Notice, Brief, Reply Brief*)
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Return-Receipt Postcard
- ☐ Other Enclosure(s) (please identify below):

Remarks: Appeal Brief filed in triplicate (3 x 23 pages = 69 pages). Extension of Time Request filed in duplicate (2 x 1 page = 2 pages).

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm	McAndrews Held & Malloy, Ltd.
Signature	Michael T. Cruz
Printed Name	Michael T. Cruz
Date	August 18, 2005

CERTIFICATE OF FAX TRANSMITTAL

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Attorney Docket No. 15258US03

In the Application of:

Ahmadreza Rofougaran et al.

U.S. Serial No.: 09/695,715

Filed: October 23, 2000

For: AN ADAPTIVE RADIO TRANSCEIVER

Examiner: Marceau Milord

Group Art Unit: 2682

Confirmation No.: 2742

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APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This paper is an Appeal Brief in support of a Notice of Appeal that was received at the United States Patent and Trademark Office on May 18, 2005. Appellants have enclosed a Request for a One-Month Extension of Time.

REAL PARTY IN INTEREST

Broadcom Corporation, a corporation organized under the laws of the state of California and having a place of business at 16215 Alton Parkway, Irvine, California 92618-3616, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment filed with the present application and recorded on Reel 011831, Frame 0398.

RELATED APPEALS AND INTERFERENCES

There are currently no appeals pending regarding related applications.

STATUS OF THE CLAIMS

Claims 164-221 are pending in the present application. Pending claims 164-221 have been rejected under 35 U.S.C. § 103(a) and are the subject of this appeal.

STATUS OF THE AMENDMENTS

There are no amendments pending in the present application.

SUMMARY OF THE INVENTION

Some embodiments according to some aspects of the present invention may provide a complimentary metal oxide semiconductor (CMOS) integrated circuit that includes, for example, a transmitter. The transmitter may include, for example, a tunable oscillator, a mixer, a phase detector and a local oscillator. The tunable oscillator may have, for example, a tuning input. The mixer may have, for example, a first input coupled to the oscillator, a second input and an output. The phase detector may have, for example, a first input coupled to the mixer output, a second input and an output coupled to the tuning input. The local oscillator may be coupled to, for example, the second input of the mixer.

Some embodiments according to some aspects of the present invention may provide a transmission system that includes, for example, a transmitter and a local

oscillator. The transmitter may include, for example, a tunable oscillator, a subsampling mixer and a phase detector. The tunable oscillator may have, for example, a tuning input. The subsampling mixer may have, for example, a first input coupled the oscillator, a second input and an output. The phase detector may have, for example, a first input coupled to the mixer output, a second input, and an output coupled to the tuning input. The local oscillator may be coupled to, for example, the second input of the mixer.

Some embodiments according to some aspects of the present invention may provide a complimentary metal oxide semiconductor (CMOS) transmitter system that may include, for example, first oscillator means, mixer means, detector means and second oscillator means. The first oscillator means may generate, for example, a first signal having a tunable frequency and may include, for example, tuning means that may tune the frequency of the first signal. The mixer means may mix the first signal with a second signal to produce a mixed signal. The detector means may detect a phase difference between the mixed signal and an input signal may generate an error signal which is a function of the phase difference. The tuning means may be responsive to the error signal. The second oscillator means may generate the second signal.

Some embodiments according to some aspects of the present invention may provide a transmitter system that may include, for example, first oscillator means, mixer means, filter means, detector means and second oscillator means. The first oscillator means may generate a first signal having a tunable frequency and may include, for example, tuning means that may tune the frequency of the first signal. The mixer means may mix the first signal with a second signal to produce a mixed signal. The filter means may filter the mixed signal to generate a difference signal between the frequency of the first signal and a harmonic of the second signal. The detector means may detect a phase difference between the filtered mixed signal and an input signal and may generate an error signal which is a function of the phase difference. The tuning means may be responsive to the error signal. The second oscillator means may generate the second signal.

ISSUES FOR REVIEW

Whether claims 164-221 are unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,167,246 to Joseph S. Elder et al. ("Elder") in view of U.S. Patent No. 4,710,970 to Joseph C. Wu et al. ("Wu").

GROUPING OF CLAIMS

Claims 164-221 stand or fall together.

ARGUMENT

With respect to claims 164-221, Appellants respectfully submit that Elder in view of Wu were improperly combined.

Appellants cannot stress enough that Elder relates to a fully integrated all-CMOS receiver and that independent claims 164, 182, 199 and 211 recite a transmitter, a transmitter system and/or a transmission system. The title of Elder is "Fully Integrated All-CMOS AM Receiver". See title of Elder. The Field of the Invention section states that "[t]his invention relates to radio wave receivers and, in particular, to a receiver formed as a single integrated circuit." See col. 1, lines 13-14 of Elder. The Background section describes "radio receivers, such as amplitude modulation (AM) type receivers". See col. 1, lines 17-18 of Elder. All the figures in Elder relate to the AM receiver. "FIG. 1 is a block diagram of a single chip receiver in accordance with one embodiment of the invention. FIG. 2 provides an additional detail of the LO Sweep Generator" which is merely a detailed figure of a component in FIG. 1 which illustrates a single chip receiver. See col. 2, lines 3-5 of Elder. "FIG.3 illustrates an optimum LO sweep range" which merely adds further detail to FIG. 2 which all relates to the AM receiver. See col. 2, line 7 of Elder. "FIGS. 4-76 illustrate actual circuitry for implementing a preferred embodiment of the single chip receiver." See col. 2, lines 8-10 of Elder.

The above-identified evidence supports Appellants' view that the disclosure relates to a fully integrated all-CMOS AM receiver and not a transmitter as alleged by the Examiner. The Examiner has pointed to isolated incidents in which the term "transmitter" has been used and erroneously assumed that particular figures, particular

components in particular figures or descriptions thus relate to a "transmitter" because of the mere proximity of the various descriptions to the term "transmitter". However, the Examiner has taken excerpts from Elder and taken the excerpts out of context in make such broad sweeping interpretations and characterizations.

The point of the invention of Elder is that the alleged complexities (e.g., additional functions) and inventive concepts provided in the fully integrated all-CMOS AM receiver allow for the allegedly inventive and more complex fully integrated all-CMOS AM receiver to be used with simpler, cheaper and less accurate transmitters. However, Elder does not describe a transmitter in any figure and merely mentions a transmitter in passing as a foil to the superior qualities of the fully integrated all-CMOS AM receiver. In other words, Elder describes a fully integrated all-CMOS AM receiver that can be used with a simpler, less accurate and cheaper transmitter. However, such a transmitter is not described in detail and merely mentioned in passing since Elder relates to a receiver and not a transmitter. Appellants believe that support for Appellants' interpretation can be found in the very text that is cited by the Examiner, for example, in the Summary section of Elder:

> The receiver uses a novel architecture that allows the receiver to demodulate signals over a wide RF band, which eliminates the need for manual tuning. This is referred to as a swept LO mode. This also significantly relaxes the frequency accuracy and stability requirements of the Transmitter, allowing the receiver to be compatible with both SAW-based and LC-based transmitters. The receiver sensitivity and selectivity are sufficient to provide low bit error rates for decode ranges over 100 meters, equaling the performance of other more expensive solutions.

See col. 1, lines 37-47 of Elder. Thus, the alleged innovations of Elder allow it to be used even with the cheaper and less accurate SAW-based and LC-based transmitters. In view of this interpretation, it is clear that the Examiner is incorrect in his interpretation that the figures illustrate components of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211. Clearly, Elder mentions, only in passing, "SAW-based and LC-based" transmitters, the description of such transmitters being so limited.

In support of the Examiner's argument that Elder teaches the recited elements of a transmitter, a transmission system and/or a transmitter system as set forth in independent claims 164, 182, 199 and 211, the Examiner cites col. 1, lines 39-44, col. 2, lines 52-61 and col. 3, lines 31-35 of Elder. Col. 1, lines 39-44 of Elder was already discussed above. Appellants reproduce the relevant lines of the other citations below:

> In the context of this application, fully integrated means that all of these functions in their entirety have been simultaneously incorporated onto a single semiconductor die (integrated circuit or IC). Additional aspects of the receiver (to be detailed subsequently) reduce overall radio system complexity, cost, and transmitter performance requirements. Note that DC control lines for the receiver (described subsequently) may be either pinned-out for maximum end-user control, or may be fixed on the die via a metal mask, the latter allowing the most economical packaging.

Col. 2, lines 52-61 of Elder.

> In Swept mode, the LO frequency is varied across a range of frequencies at a rate sufficiently higher than the data rate to allow for peak (envelope) detection. This mitigates the requirement for an accurately controlled and/or age and temperature stabilized transmitter carrier frequency.

Col. 3, lines 31-35 of Elder.

Appellants respectfully submit that col. 2, lines 52-61 of Elder merely support Appellants' interpretation that allegedly inventive aspects provided in the fully integrated all-CMOS AM receiver "reduce[s] ... transmitter performance requirements". In other words, because of the additional circuitry shown in FIGS. 1-76, the fully integrated all-CMOS AM receiver can be used with simpler, cheaper, less accurate transmitters that have reduced transmitter performance requirements. Elder does not, however, describe the details of these transmitters since that is not the impetus of the invention or the descriptions in Elder.

Appellants respectfully submit that col. 3, lines 31-35 of Elder also merely support Appellants' interpretation that allegedly inventive aspects provided in the fully integrated all-CMOS AM receiver such as the swept LO mode merely reduces the requirements of any transmitter in communication with the fully integrated all-CMOS

AM receiver. In other words, because of the additional circuitry shown in FIGS. 1-76, the fully integrated all-CMOS AM receiver can be used with simpler, cheaper, less accurate transmitters that do not have "accurately controlled and/or age and temperature stabilized transmitter carrier frequency". Elder does not, however, describe the details of these transmitters since that is not the impetus of the invention or the descriptions in Elder.

Appellants respectfully submit that the Examiner was incorrect in alleging that Elder taught or suggested the recited elements of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211. Appellants respectfully submit that, despite the Examiner's allegations to the contrary, Elder relates to a receiver and not, as alleged by the Examiner despite all the evidence provided by Appellants during the prosecution of the present application, to a transmitter. It was improper for the Examiner to recite receiver components of the fully integrated all-CMOS AM receiver to meet the elements of a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211.

Elder teaches a fully integrated all-CMOS AM receiver and not a transmitter as alleged by the Examiner. The components in FIGS. 1-2 of Elder are components of a fully integrated all-CMOS AM receiver as opposed to components of a transmitter, transmitter system and/or transmission system as set forth in independent claims 164, 182, 199 and 211.

M.P.E.P. § 2145(X)(D)(1) states that "[a] prior art reference that 'teaches away' from the claimed invention is a significant factor to be considered in determining obviousness" (citing *In re Gurley*, 27 F. 3d 551, 554, 31 U.S.P.Q.2d 1130, 1132 (Fed. Cir. 1994).

The components that the Examiner has selectively picked from the various figures of Elder are all components of a receiver, not components of a transmitter, a transmitter system and/or a transmission system as recited in independent claims 164, 182, 199 and 211. Appellants respectfully submit that the receiver of Elder teaches away from the transmitter, the transmitter system and/or the transmission system as set forth in the claim inventions recited in independent claims 164, 182, 199 and 211. Since this is a "significant factor" to be considered in determining obviousness, Appellants respectfully

submit that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu.

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

M.P.E.P. § 2145(X)(D)(2) states "[i]t is improper to combine references where the references teach away from their combination" (citing In re Grasselli, 713 F. 2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983)).

The Examiner has attempted to combine the teachings of Elder with the teachings of Wu. The combination was based on the Examiner's interpretation that Elder taught a transmitter, not a receiver. However, in view of the arguments made of record during the prosecution of the present application and the arguments made above, it is clear that Elder teaches a receiver and not a transmitter. Thus, since the receiver receiving AM signals in Elder teaches away from the transmitter transmitting FM signals in Wu and vice versa, Appellants respectfully submit that Elder and Wu were improperly combined.

For at least the above reasons, Appellants respectfully request that the Board reverse the Examiner's obviousness rejection over Elder in view of Wu with respect to claims 164-221.

Under the heading "The Proposed Modification Cannot Render the Prior Art Unsatisfactory for Its Intended Purpose", M.P.E.P. § 2143.01 states that "[i]f the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification" (citing *In re Gordon*, 733 F. 2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)).

There can be no argument that the intended purpose of Elder is to provide a fully integrated all-CMOS AM receiver. There can be no argument that the components cited by the Examiner in FIGS. 1 and 2 of Elder are components of a fully integrated all-CMOS AM receiver. Regardless of what Wu allegedly teaches, Wu cannot modify Elder to make it a transmitter, a transmitter system and/or a transmission system as set forth in independent claims 164, 182, 199 and 211 because Elder would not longer be a receiver (e.g., a fully integrated all-CMOS AM receiver), which is its intended purpose. Appellants respectfully submit that Elder cannot be modified to provide a transmitter, a

transmitter system and/or a transmission system since such a ...

Effective on 12/08/2004.
Fees pursuant to the consolidated Appropriates Act 2005 (H.R. 4818).

FEE TRANSMITTAL for FY 2005

RECEIVED CENTRAL FAX CENTER AUG 1 8 2005

Complete if Known	
Application Number	09/695,715
Filing Date	October 23, 2000
First Named Inventor	A. Rofougaran
Examiner Name	M. Milord
Art Unit	2682
Attorney Docket No.	15258US03

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 620.00

METHOD OF PAYMENT (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
Application Type	Fee ($)	Small Entity Fee($)	Fee($)	Small Entity Fee($)	Fee($)	Small Entity Fee($)	Fees Paid($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee($)	Small Entity Fee($)
Each claim over 20, or for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims ______ -20 or HP Extra Claims ______ x Fee($) ______ = Fee Paid ($) ______

HP = highest number of total claims paid for, if greater than 20

Multiple Dependent Claims Fee ______ Fee Paid ($) ______

Indep. Claims ______ -3 or HP Extra Claims ______ x Fee($) ______ = Fee Paid ($) ______

HP = highest number of independent claims paid for, if greater than 3

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets ______ -100 Extra Sheets ______ /50 Number of each additional 50 or fraction thereof ______ (round up to a whole number) x Fee($) ______ = Fee Paid($) ______

4. OTHER FEE(S)

Fee Paid($)

Non-English Specification, $130 fee (no small entity discount) ______

Other: Appeal Brief $500; 1-mo. ext. of time $120 620

SUBMITTED BY

Signature	Michael T Cruz	Registration No. (Attorney/Agent)	44,636	Telephone	(312)775-8000
Name (print/type)	Michael T. Cruz			Date	August 18, 2005